

Section 4.8 - Complex Numbers and the Quadratic Formula

Solve the following quadratic equations:

$$\sqrt{-6} \\ i\sqrt{6}$$

1) $2x^2 - 3x + 5 = 0$

$a=2 \quad b=-3 \quad c=5$

$$\frac{3 \pm \sqrt{(-3)^2 - 4(2)(5)}}{2(2)} = \frac{3 \pm \sqrt{-31}}{4} =$$

$$\frac{3 \pm i\sqrt{31}}{4}$$

Page 1

2) $-x^2 + 4x - 5 = 0$

$a=-1 \quad b=4 \quad c=-5$

$$\frac{-4 \pm \sqrt{(4)^2 - 4(-1)(-5)}}{2(-1)} = \frac{-4 \pm \sqrt{-4}}{-2} =$$

$$\frac{-4 \pm i\sqrt{4}}{-2} = \frac{-4 \pm 2i}{-2} = \textcircled{2 \pm i}$$

Page 2

$$3) \quad 3x^2 = x - 2$$

$$\underline{-x+2 \quad -x+2}$$

$$3x^2 - x + 2 = 0$$

$$a=3 \quad b=-1 \quad c=2$$

$$\frac{1 \pm \sqrt{(-1)^2 - 4(3)(2)}}{2(3)} =$$

$$\frac{1 \pm \sqrt{-23}}{6}$$

$$\frac{1 \pm i\sqrt{23}}{6}$$

$$4) \quad 4x^2 + 12 = -12x$$

$$4x^2 + 12x + 12 = 0$$

$$\underline{\cancel{4}(x^2 + 3x + 3) = 0}$$

$$x^2 + 3x + 3 = 0$$

$$a=1 \quad b=3 \quad c=3$$

$$\frac{-3 \pm \sqrt{(3)^2 - 4(1)(3)}}{2} =$$

$$\frac{-3 \pm \sqrt{-3}}{2}$$

$$\frac{-3 \pm i\sqrt{3}}{2}$$

Homework: pg 253 # 39-44

③⑨ $x^2 + 2x + 3 = 0$

④⑩ $-3x^2 + x - 3 = 0$

④⑪ $2x^2 - 4x + 7 = 0$

④⑫ $x^2 - 2x + 2 = 0$

④⑬ $x^2 + 5 = 4x$

④⑭ $2x(x-3) = -5$

Pg. 253
(27-29)

27) $\frac{3-2i}{5i}$

28) $\frac{-2i}{1+i}$

29) $\frac{4-3i}{-1-4i}$

